



Island County Public Health Hydrogeology Program

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Hydrogeologist

1996

- Completed groundwater management planning
- Hired a hydrogeologist
- Beginnings of a groundwater database
- Beginnings of a groundwater monitoring network
- Many concerns over groundwater availability
- Questions regarding seawater intrusion
- Chloride based seawater intrusion policy
- Entire county mapped as a “CARA”



Division of Environmental Health Office of Drinking Water

[HELP](#)

REPORTS

Water System General Information

[Public Water System General Information \(Best For Export\)](#)
[Public Water System Source Information \(Best For Export\)](#)
[List Sources Water Systems](#)
[Water Facilities Inventory Report \(WFI\)](#)

Laboratories

[List Laboratory Report](#)

Operating Permits

[Group A Operating Permit Status Report](#)

Samples

[List Chemical Samples](#)

Coliform Reports

[Coli A/P Samples with Presence](#)

Exceedances

[Sample Exceedance Long Version](#)
[Sample Exceedance Short Version](#)

Miscellaneous

[Pre-Adequacy Data Summary Report](#)
[Sanitary Survey Pre Survey Data Packet](#)
[Information Request Form](#)

DOWNLOADS

Water System General Information

[Public Water System General Information By County](#)
[Public Water System Source Information By County](#)
[Public Water System Water Quality Data By County, Year, And Analyte Group](#)

Compliance

[Group B Coliform/Nitrate Without Current Sample](#)

Exit

Intrusion Analysis

Chloride vs. Conductance

Hardness vs. Conductance

Stiff Diagram

Piper Diagram

Bivariate Analysis

Other Graphs

Discharge Rate

Tides

None

Water Level

BGS

MSL

Precipitation

Monthly

Yearly

Clear All Graphs

Turbidity

Mn	Na	NO3	Pb	Se	SO4	TDS		Zn
	32.0	<0.0025			28			

Balance Calculation

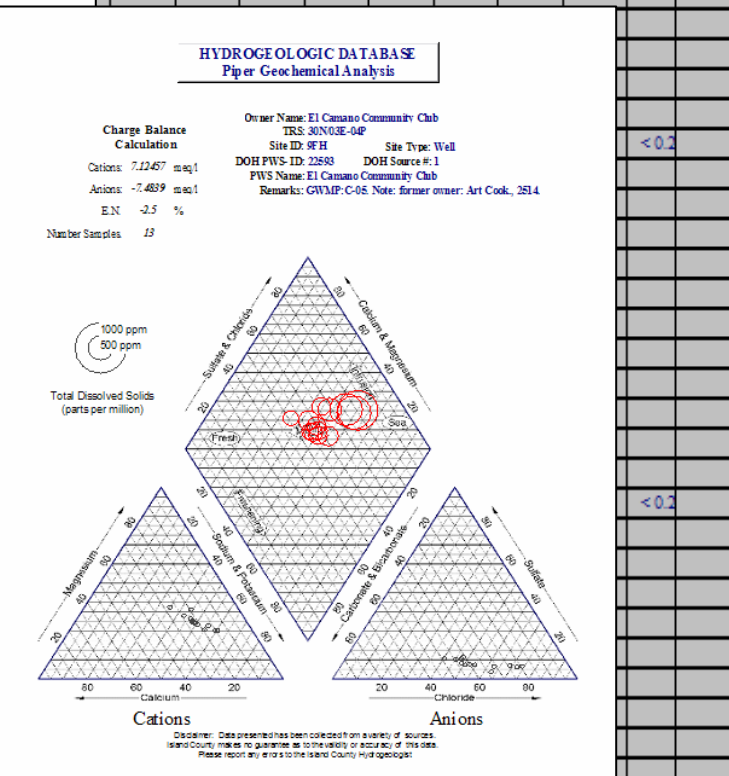
7.1246 meq/l

-7.484 meq/l

-2.6 %

13

Remarks



	629						156
	842						210
	620						157

HYDROGEOLOGIC DATABASE Piper Geochemical Analysis

Charge Balance Calculation

Cations: 7.12457 meq/l
Anions: -7.4839 meq/l
EN: -2.5 %

Number Samples: 13

Owner Name: El Camano Community Club
TFS: 30N03E-04P

Site ID: 9FH Site Type: Well

DOH PWS ID: 22693 DOH Source #: 1

PWS Name: El Camano Community Club
Remarks: GWMP: C-05. Note: former owner: Art Cook, 3514

1000 ppm
500 ppm

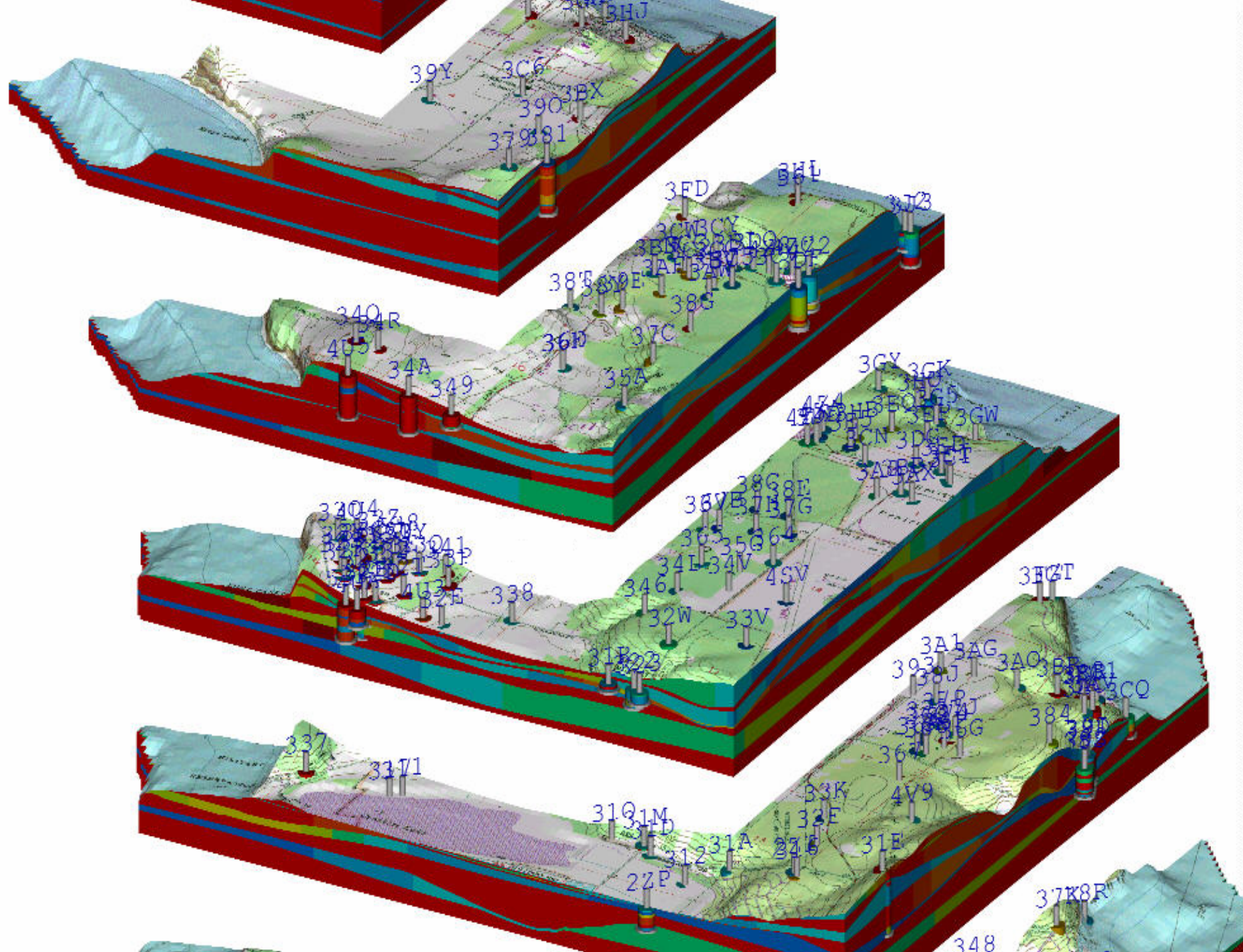
Total Dissolved Solids
(parts per million)

Sodium & Potassium
Calcium
Magnesium
Chloride
Sulfate
Bicarbonate & Carbonate

Cations

Anions

Disclaimer: Data presented has been collected from a variety of sources. Island County makes no guarantee as to the validity or accuracy of this data. Please report any errors to the Island County Hydrogeologist.



Island County (WRIA 06) Watershed Planning



Water Resource Advisory Committee (WRAC)

WRAC meetings are held 1st Thursday of every month. **UPDATED [2006 WRAC Meeting Locations](#)**

[Final Draft of the "Island County Water Resource Management Plan"](#) - Plan APPROVED June 20, 2005 by the Board of Island County Commissioners

WRAC **[Topic Papers](#)** were used to formulate the Island County / WRIA 6 Comprehensive Watershed Plan.

Please contact [Jill Wood](#) for more information.

WRIA 6 Salmon Recovery Plan - Adopted by the WRAC on May 6, 2005 and by the Board of Island County Commissioners on May 9, 2005. This document serves two purposes. It serves as an update to the local technical guidance for project sponsors proposing projects on Whidbey and Camano Islands for funding by the Salmon Recovery Funding Board and other grant opportunities for habitat conservation and restoration. It also serves as the local chapter to the regional Salmon Recovery Planning effort for Puget Sound that is being led by Shared Strategy for Puget Sound.

[Salmon Recovery Plan](#) [Figures 2-5](#) [Figures 6-9](#) [Appendices A-E](#) [Appendices F-J](#)

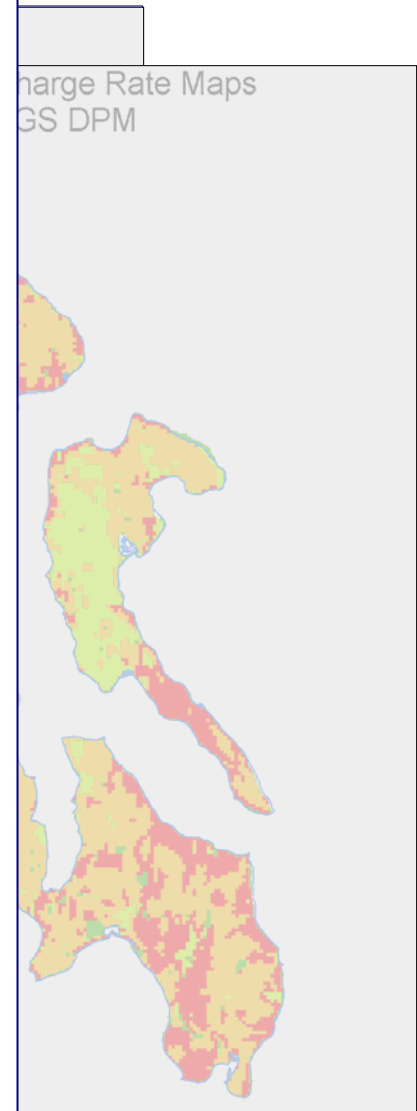
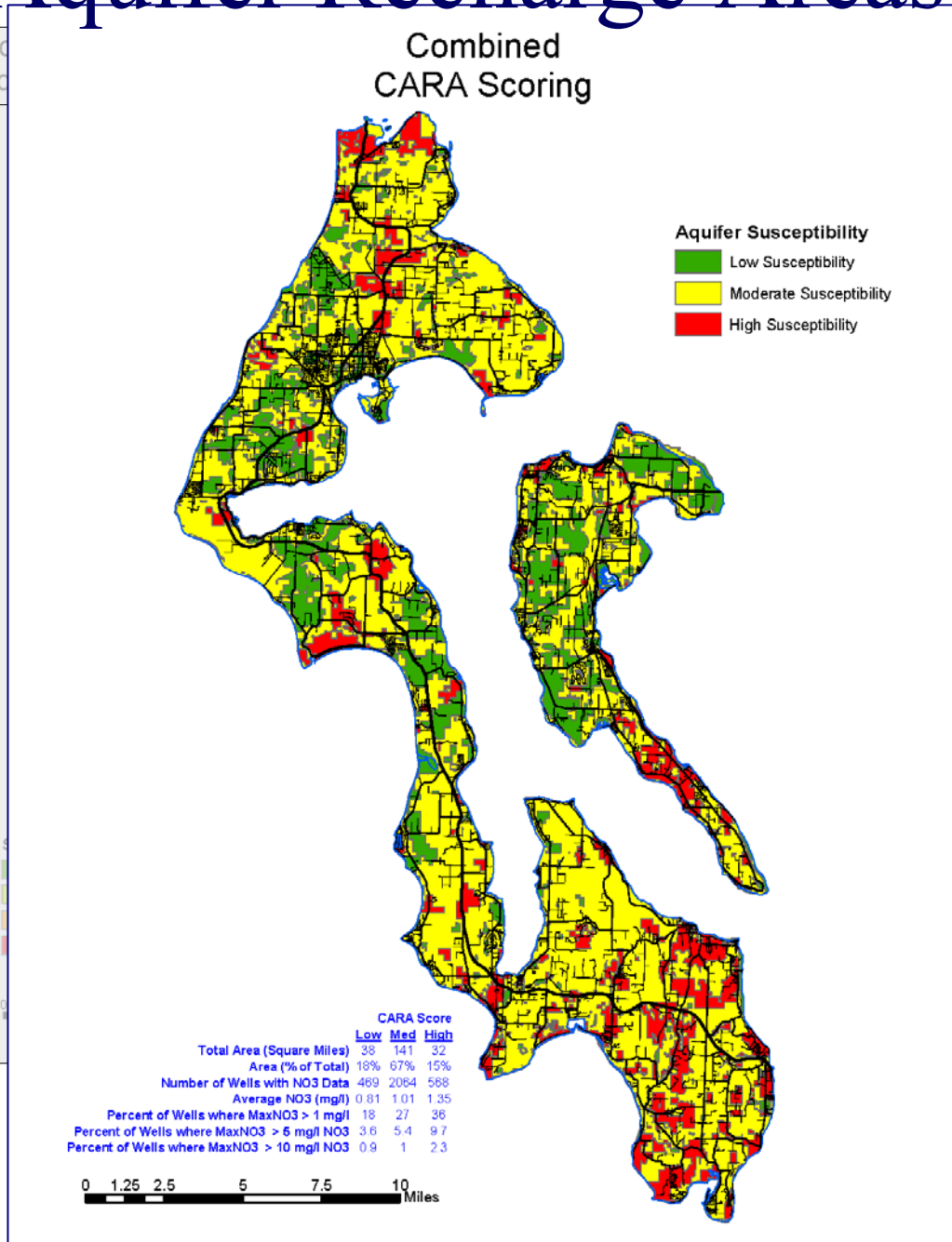
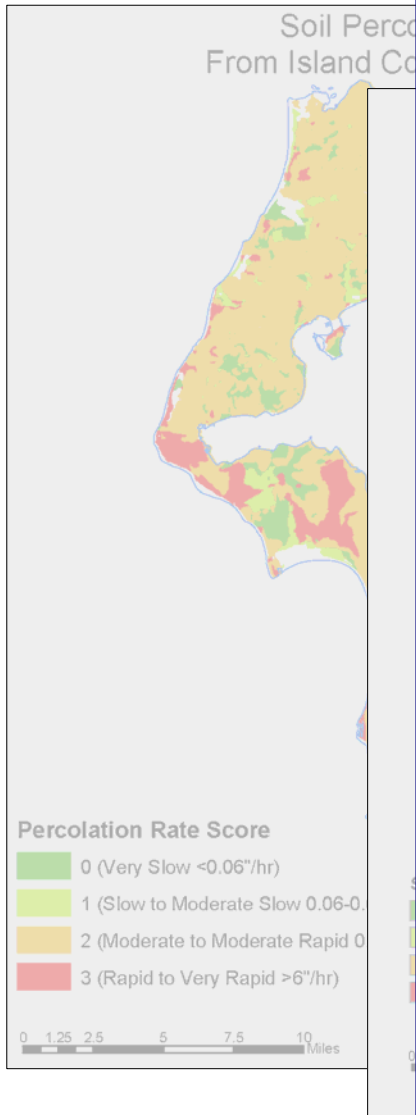
[Executive Summary](#)

[Island County Resolution Adopting Plan](#)

WRAC Mission & Background

The mission of the WRAC is to ensure that the water resources of Island County are

Critical Aquifer Recharge Areas (CARA)

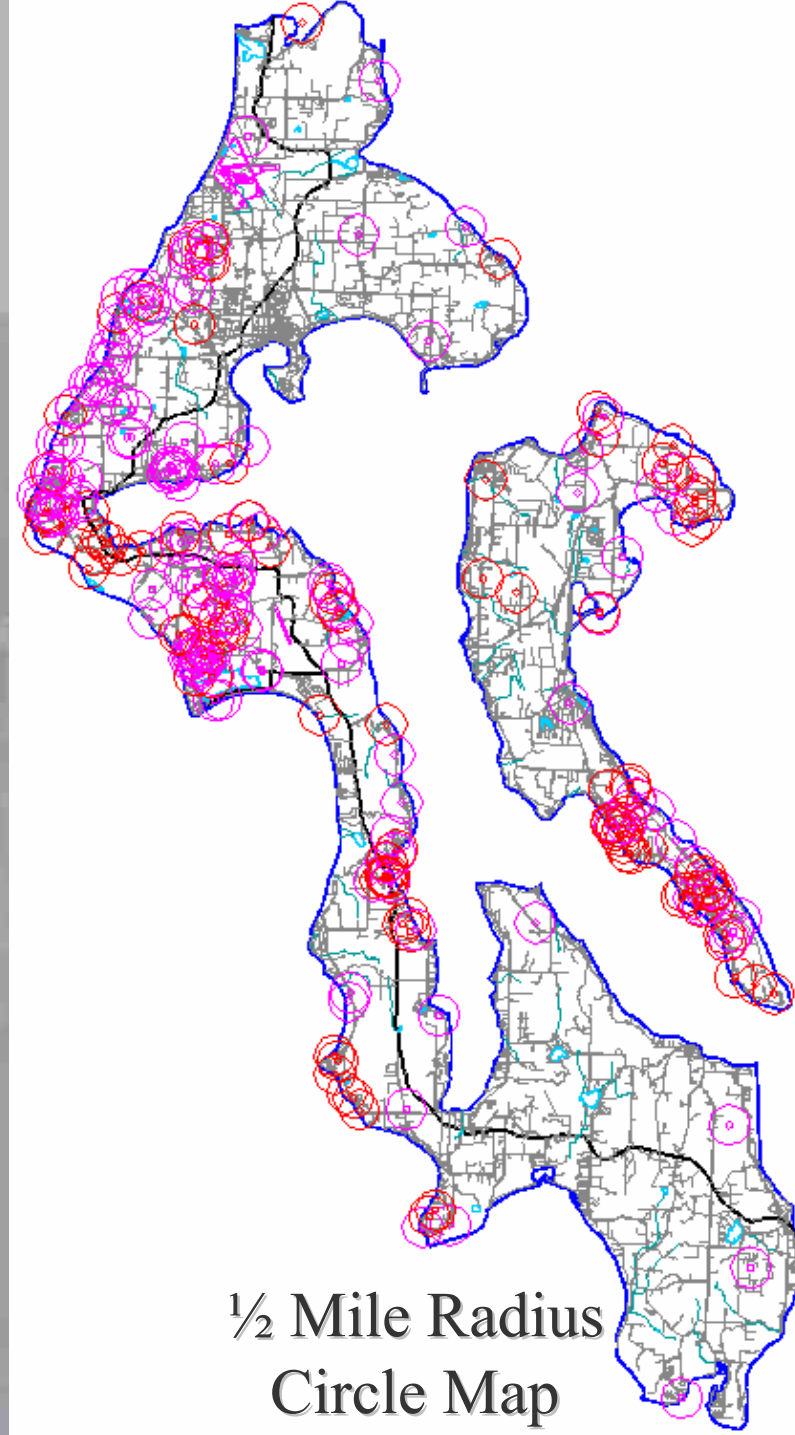


Island County Salt Water Intrusion Policy (Adopted 1989)

- Based on Chloride Concentration in Wells
- Created “Risk Zones”

<u>Risk Category</u>	<u>Chloride (mg/L)</u>
Low	< 100
Medium	100-200
High	> 200

- Utilized a 1/2 Mile Radius Around “Impacted” Wells

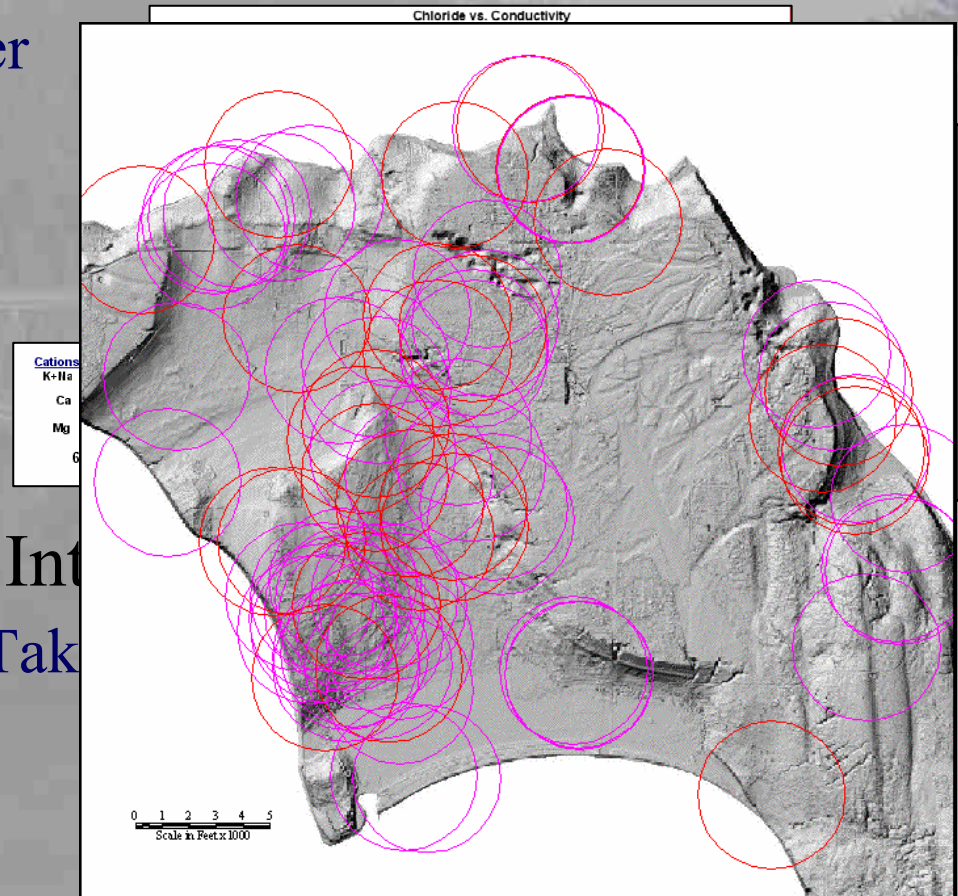


Limitations of the Saltwater Intrusion Policy

- Other Sources of Chloride (False Positives)

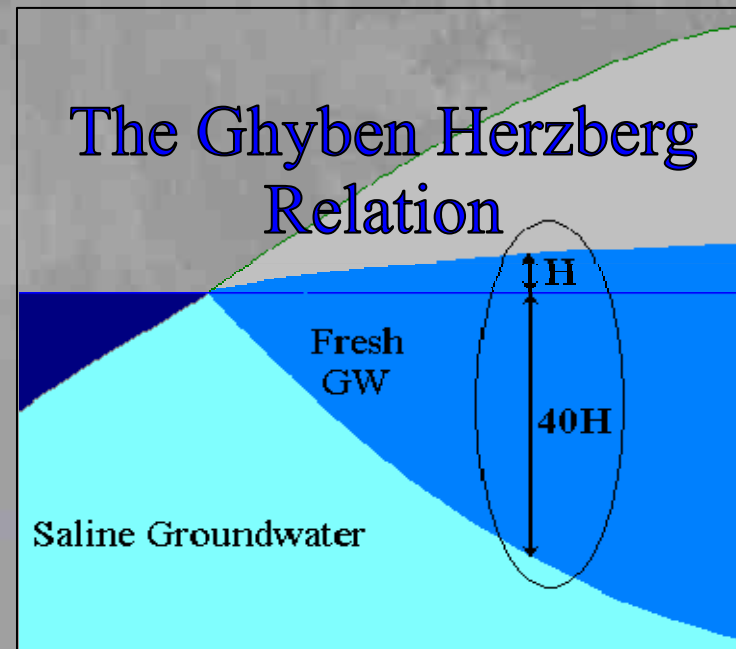
- Very Hard Groundwater
- Septic Systems
- Connate (Old) Waters
- Windblown Sea Spray
- Irrigation Recharge
- Well Disinfection

- Transient Response of Intrusion
 - Lateral Intrusion May Take Time to Reach Equilibrium Position
- Lack of Prediction
- Lack of Confidence



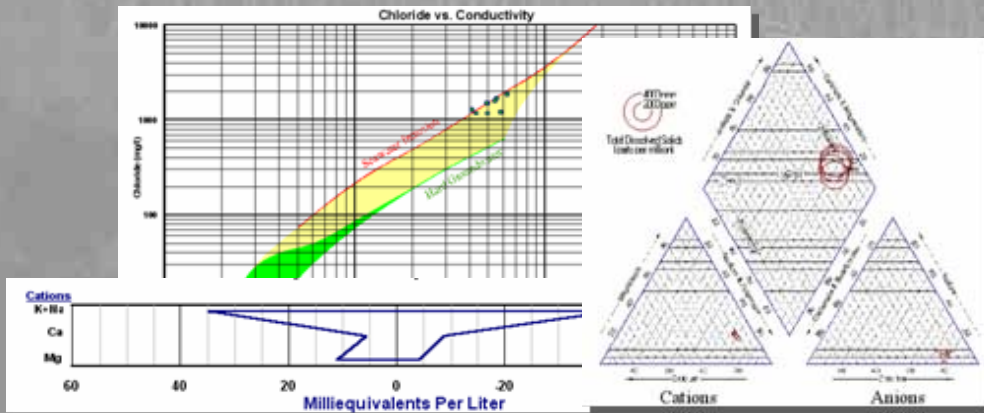
Water Level Elevation and Seawater Intrusion

- Adequate aquifer pressure (above sea level) can prevent seawater intrusion
- Water level elevation can be used to assess risk for intrusion



ESSB 2514e Watershed Planning

- Data Collected from Nearly 400 Wells / 2 per Mile²
- Depth to Water Measurements
- Computerized Data Loggers
- Water Sample → Laboratory
Major Ion Analysis



- Survey Grade GPS to Determine Measuring Point Elevations

New Island County

Revised Seawater Intrusion

Risk Rating

Risk Category	Water Level Elevation ¹	Chloride Concentration ²
Low	Greater than 8.4	Any
Medium	Less than or Equal to 8.4	Less than 100
High	Less than or Equal to 8.4	Between 100 and 250
Very High	Less than or Equal to 8.4	Greater than 250

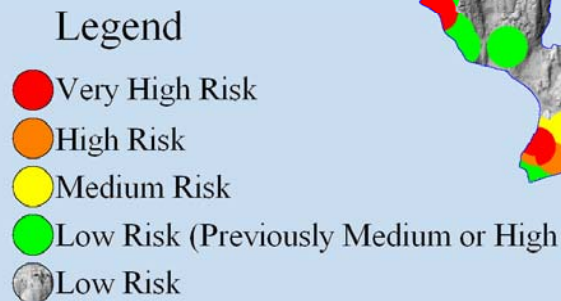
¹ Water Level Elevation in feet above Mean Sea Level (MSL) NAVD 88.

² Chloride Concentration in Milligrams per Liter

The New Circle Map

False Positives

False
Negatives



Map generated utilizing data from January 2005

Monitoring Network Expansion

- Current groundwater monitoring network comprised of approximately 845 single family and small group domestic water system sources.
Establish Water Source and Supply
- \$150K DOE grant to install dedicated monitoring wells which will provide better data on long-term trends (Water Level and Chemistry) strategies
Modified to Include New
- Augment (not replace) current network.

Effective June 21, 2005

- Electronic Data Collection Systems (PPC)